

Abstract

A precision fluid dispensing system containing at least one two-piece pump and a precision closed loop controller drive system to address the small volume precision dispensing requirements of bioscience applications. A multiple diameter pump can be combined with a pump having multiple inlet and outlet ports to allow for precision multiple outlet dispenses in a single pump that finds use with microtiter plate pipetting and other precision dispensing. Inlet ports can be located on the smaller diameter of the cylinder with outlet ports on the larger diameter of the cylinder. A microcontroller with closed loop feedback provides exact linear positioning and motion of the pump piston as well as optional control of a nozzle to provide exact micro-dispensing of fluids. A dual piston pump can be used to provide greater accuracy.